

**REMARKS**

Applicant wishes to thank the Examiner for withdrawing the § 101 rejections.

I. Double Patenting Rejections

Claims 1-29 and 31-63 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 33-43 and 44-49 of copending U.S. Patent Application No. 10/678,741. Applicant has previously submitted a terminal disclaimer (a copy of which is attached) to overcome the provisional rejections based on the above cited reference. Thus, Applicant respectfully requests that the double patenting rejections be withdrawn.

II. Claim Rejections under 35 U.S.C. § 103 based on Takai

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 7,221,733 (Takai) in view of Takeco. Claims 24-29 and 32-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takai in view of Takeco and Fitzgerald. Claims 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Takai in view of Takeco and Verard.

As discussed in the previous response, Takai cannot be used to combine with other references in an obviousness rejection under § 103(c). This is because Takai was filed on January 2, 2002, which is before the filing date (September 5, 2003) of the subject application, and was published on May 22, 2007. Thus, Takai is a 102(c) prior art to the subject application. Takai is assigned on its face to Varian Medical Systems Technologies, Inc., which is a subsidiary

of Varian Medical Systems, Inc. Thus, the subject matter of Takai and the claimed invention were, at the time the claimed invention was made, owned directly or indirectly by the same entity or subject to an obligation of assignment to the same entity. As such, under 35 U.S.C. § 103(c), Takai cannot be combined with other references to preclude the patentability of the subject claims. For at least the foregoing reasons, Applicant respectfully requests that all § 103 rejections based on Takai be withdrawn.

III. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, and Kalend

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 7,006,862 (Kaufman) in view of U.S. Patent No. 6,125,166 (Takeo) and U.S. Patent No. 5,784,431 (Kalend).

A. Claims 1, 10, and 15

Claim 1 recites gating a medical procedure *based at least in part on the first composite image*, wherein the act of gating the medical procedure is performed in *real time* (Emphasis Added). Claims 10 and 15 recite similar limitations. Applicant certainly agrees with the Examiner that Kaufman and Takeo do not disclose the above limitations. According to page 4 of the Office Action, column 3, line 67 to column 4, line 3 of Kalend allegedly disclose the above limitations, and it would have been allegedly obvious to gate the radiation procedure in the system of Kaufman based on composite image in real time “such that the radiation is directed to the target site.” Applicant respectfully traverses.

As an initial matter, Applicant respectfully notes the claims describe that it is the act of gating the medical procedure that is performed in real time. Thus, the purported disclosure of

“real-time” images by Kaufman on page 4 of the Office Action does not mean that any act of gating is performed in real time, and is not sufficient to meet the above limitations.

To the extent that it is the Examiner’s intent to combine the real time gating of treatment radiation from Kalend with the system of Kaufman and Takeo, Applicant respectfully notes that the real time gating of Kalend cannot be implemented in the system of Kaufman and Takeo. This is because Kaufman discloses an imaging method for diagnostic purpose. The diagnostic imaging method of Kaufman involves determining a composite image, which is used to determine calcium detection or 3-D rendering (see abstract and c8:15-16). Notably, the calcium detection and the 3-D rendering described in Kaufman are actually performed retrospectively - i.e., long after the projection images are obtained (see also, title, c4:46-48, and c14:65). Similarly, Takeo discloses a diagnostic method of forming an energy subtraction image, which is used for diagnosis of an illness (c3:47-54). In Takeo, the procedure for diagnosis of the illness is also performed long after the image is obtained. Because the composite image as taught by Kaufman and Takeo is determined long after the initial images are obtained, the composite image of Kaufman and Takeo is incapable of being used to gate a radiation procedure in real time.

Also, because Kaufman and Takeo teaches imaging processing that is accomplished long after the images are obtained, Kaufman and Takeo both teach away from any use of the images in “real time.” Note that the prima facie case of § 103 rejection cannot be sustained if a cited reference teaches away from the claimed feature.

Furthermore, Applicant respectfully notes that both Kaufman and Takeo are directed to imaging techniques for diagnosing an illness. After the images are obtained, the radiation process is completed, and the images are then used for diagnosis purposes. Thus, in Kaufman

and Takeo, there is no process that needs to be gated after the images are obtained, and there is no reason to insert a gating process in the system of Kaufman and Takeo after the images are obtained. Also, as discussed, because the image processing is accomplished long after the images are obtained in Kaufman and Takeo, no real time gating can be performed using the result of the image processing. This further evidences that there is no proper reason to add a real time gating process to the system of Kaufman and Takeo.

For at least the foregoing reasons, claims 1, 10, and 15, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, and their combination.

B. No prima facie case of § 103 rejection for dependent claims 2-9, 11-14, 16-23, and 64-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 2-9, 11-14, 16-23, and 64-66 are found, and did not provide a motivation to combine Takeo with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element. Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

IV. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, Kalend, and Fitzgerald

Claims 24-29 and 32-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo and Kalend, and further in view of U.S. Patent

Application Publication 2005/0027196 (Fitzgerald).

A. Claims 24, 34, and 40

Claim 24 recites *a plurality of templates for treating a patient*, each of the templates having an image and treatment data, wherein the treatment data comprises one or more parameters for controlling an operation of a radiation machine, and wherein *each of the plurality of templates corresponds to a phase of a physiological cycle* (Emphasis Added). Claims 34 and 40 recite similar limitations. As an initial matter, Applicant notes that none of Kaufman, Takco, Kalend, and Fitzgerald, either alone or in combination, discloses or suggests a plurality of templates for treating a patient, *each of which* having an image and treatment data, and *corresponding to a phase of a physiological cycle*. For at least the foregoing reason, Applicant respectfully requests that the § 103 rejections be withdrawn.

According to the Office Action, paragraphs 12 and 23 of Fitzgerald allegedly disclose “treatment planning records,” which the Examiner considers to be the claimed “templates.” However, Applicant notes that the information in the “treatment planning record” are in fact for documenting “the radiation a patient received from implant radiation” (see paragraph 23, especially last sentence). Thus, the so-called “treatment planning record” of Fitzgerald clearly does not include treatment data that include one or more parameters for controlling an operation of a radiation machine, as described in claims 24, 34, and 40. That the so called “treatment plan” of Fitzgerald is for documenting a performed treatment, and not for use to treat a patient (for treatment) is further evidenced by paragraph 23, which states that the treatment plan is for “reflecting the treatment *actually applied*” (Emphasis Added).

In addition, Applicant respectfully notes that paragraph 23 of Fitzgerald does not disclose *multiple templates* for treating a same patient, wherein each template corresponds to a phase of a physiological cycle. Rather, contrary to the Office Action's characterization, paragraph 23 of Fitzgerald actually describes a (i.e., one) treatment record.

Also, according to page 6 of the Office Action, Kalend discloses adjustment of more than one parameter related to radiation treatment, which the Office Action analogizes as the claimed "parameters for controlling an operation of a radiation machine." However, Applicant respectfully notes that Kalend does not disclose or suggest that such parameters be parts of different respective templates (i.e., multiple templates that corresponds to different phases of a physiological cycle) to treat a patient, as described in the claims. Note that in order to sustain a claim rejection under § 103, the purported combination must result in the identical claimed subject matter, and the identical arrangement of elements as described in the claims.

Since none of the cited references discloses or suggests the above limitations, any purported combination of the cited references cannot result in the subject matter of claims 24, 34, and 40. For at least the foregoing reasons, claims 24, 34, and 40, and their respective dependent claims, are believed allowable over Kaufman, Takco, Kalend, Fitzgerald, and their combination.

B. Claims 49, 55, and 58

Claim 49 recites registering the input image with the template, wherein the registering comprises selecting the template *from a plurality of templates that best matches an image in the input image* (Emphasis Added). Claims 55 and 58 recite similar limitations. None of the cited references discloses or suggests such limitations. Thus, any purported combination of the cited references cannot result in the subject matter of claims 49, 55, and 58.

According to page 6 of the Office Action, Kaufman inherently discloses template matching because such may be inferred from the monitoring of duration of the R-R cycle as described in column 11, lines 33-43 of Kaufman. However, the cited passage of Kaufman actually describes including certain image datasets into a projection reconstruction. There is nothing in the cited passage of Kaufman that discloses or suggests matching one of a plurality of templates to an image in an input image. Notably, the inclusion of the image datasets in Kaufman is based on a selection of “an absolute time before or after the R-wave,” not based on a matching of images. Thus, to the extent that the inclusion of an image dataset in Kaufman is analogized as template matching (which is incorrect as discussed), Applicant respectfully notes that such inclusion of image dataset is not based on a best match to an image in an input image.

Applicant respectfully notes that the above arguments were presented in the previous response, but do not appear to have been considered and addressed in the Office Action.

For at least the foregoing reasons, claims 49, 55, and 48, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, Fitzgerald, and their combination. C. No prima facie case of § 103 rejection for dependent claims 25-29, 31-33, 35-39, 41-48, 50-51, 53-54, 57, 59-60, and 62-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 25-29, 31-33, 35-39, 41-48, 50-51, 53-54, 57, 59-60, and 62-66 are purportedly found, and did not provide a motivation to combine Takeo and Fitzgerald with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element. Thus, Applicant respectfully submits that a

prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

V. Claim Rejections under 35 U.S.C. § 103 based on Kaufman, Takeo, Kalend and Verard

Claims 49-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kaufman in view of Takeo and Kalend, and further in view of U.S. Patent Application Publication 2004/0097805 (Verard).

A. Claims 49, 55, and 58

Claim 49 recites registering the input image with the template, wherein the registering comprises selecting the template *from a plurality of templates that best matches an image in the input image* (Emphasis Added). Claims 55 and 58 recite similar limitations. Kaufman, Takeo, and Kalend do not disclose or suggest such limitations.

According to pages 6-7 of the Office Action, paragraphs 112, 132, and 146 of Verard allegedly disclose the above limitations. However, Applicant respectfully notes that paragraph 112 of Verard describes superimposing templates over images to provide a map for steering a catheter. Paragraph 132 of Verard describes acquiring previous patient information to obtain an atlas template, and using such atlas template to determine an optimal site and path for lead placement. Paragraph 146 of Verard describes templates that identify effective ablation zone, wherein such templates may be superimposed over an image to identify target area. Notably, none of the cited paragraphs 112, 132, 146 of Verard actually discloses or suggests any *selection* of a template that best matches an image in an input image, as described in the claims.



In addition, Applicant respectfully notes that the so-called “template” in Verard is for providing “guide points” (i.e., positional information) to assist navigation of a catheter (see paragraph 112). There is nothing in Verard that discloses or suggests that the template has any image, nor is there anything in Verard that discloses or suggests matching any image in a template with an input image for a selection of one of the templates.

Furthermore, because Verard specifically describes superimposing templates over images, Verard teaches using all of the templates. Thus, Verard clearly does not disclose or suggest selecting a template from a plurality of available templates, and in fact teaches away from such. Note that the prima facie case of the § 103 rejection cannot be established if the cited reference teaches away from the claimed feature.

Since none of the cited references, either alone or in combination, discloses or suggests the above limitations, any purported combination of the cited references cannot result in the subject matter of claims 49, 55, and 58. For at least the foregoing reasons, claims 49, 55, and 48, and their respective dependent claims, are believed allowable over Kaufman, Takeo, Kalend, Verard, and their combination.

B. No prima facie case of § 103 rejection for dependent claims 50-51, 53-54, 57, 59-60, and 62-66

Applicant notes that the Office Action did not specifically identify where the elements of the dependent claims 50-51, 53-54, 57, 59-60, and 62-66 are found, and did not provide a motivation to combine Takeo and Verard with Kaufman with respect to these elements. Under the ruling of the Supreme Court in *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), the element being combined must be known, and that there must be a motivation to combine such element.

Thus, Applicant respectfully submits that a prima facie case of the § 103 rejection has not been established for *each* of the above dependent claims, and requests that the § 103 rejection for these claims be withdrawn.

**CONCLUSION**

Based on the foregoing remarks, all claims are believed allowable. If the Examiner has any questions or comments regarding this response, the Examiner is respectfully requested to contact the undersigned at the number listed below.

To the extent that any arguments and disclaimers were presented to distinguish prior art, or for other reasons substantially related to patentability, during the prosecution of any and all parent and related application(s)/patent(s), Applicant(s) hereby explicitly retracts and rescinds any and all such arguments and disclaimers, and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105**, referencing billing number **VM 03-006**.

Respectfully submitted,

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